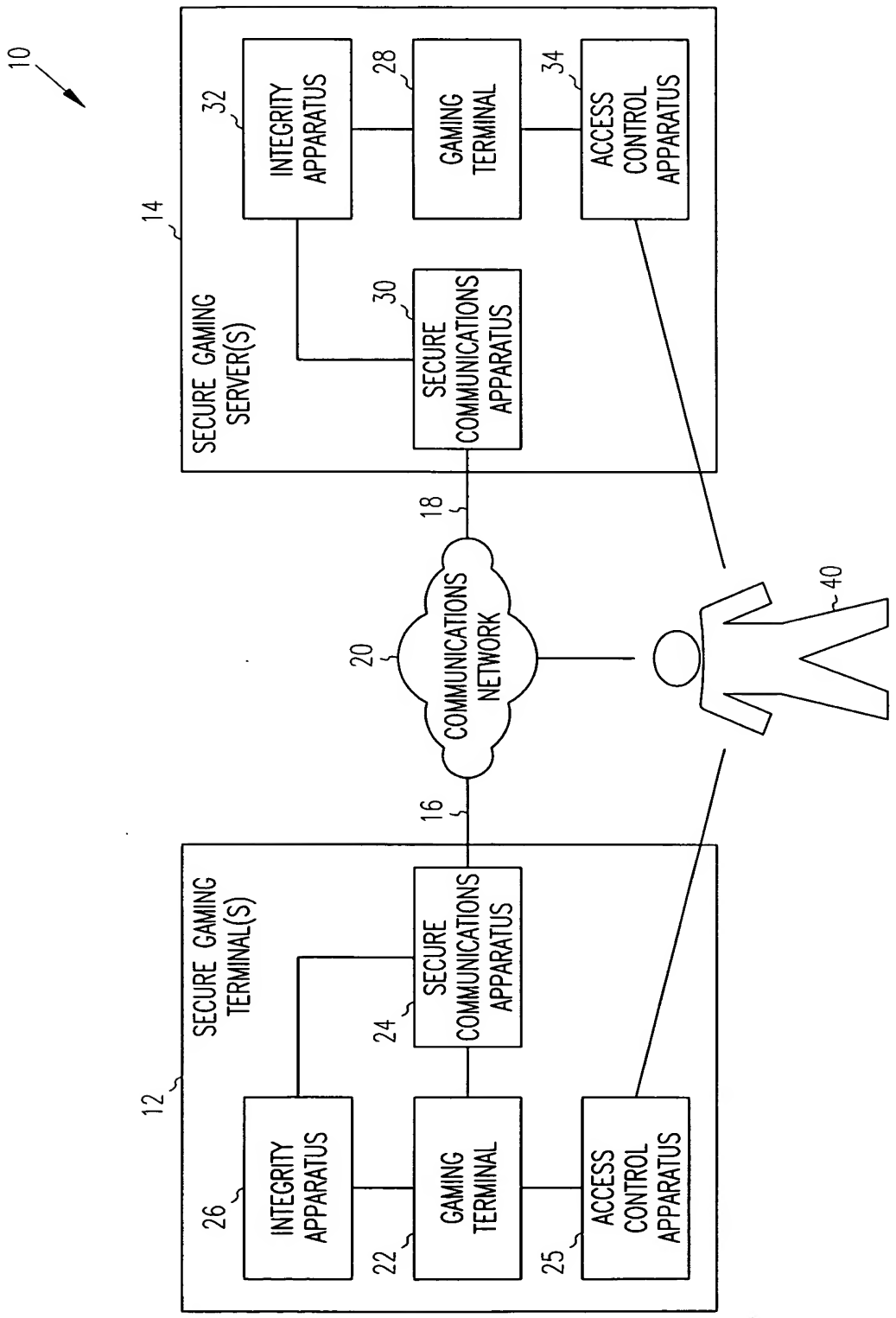
10
SECURE GAMING SERVER(S)
14
INTEGRITY APPARATUS
32
GAMING TERMINAL
28
ACCESS CONTROL APPARATUS
34
SECURE COMMUNICATIONS APPARATUS
30
18
COMMUNICATIONS NETWORK
20
16
40
SECURE GAMING TERMINAL(S)
12
INTEGRITY APPARATUS
26
GAMING TERMINAL
22
ACCESS CONTROL APPARATUS
25
SECURE COMMUNICATIONS APPARATUS
24

FIG. 1

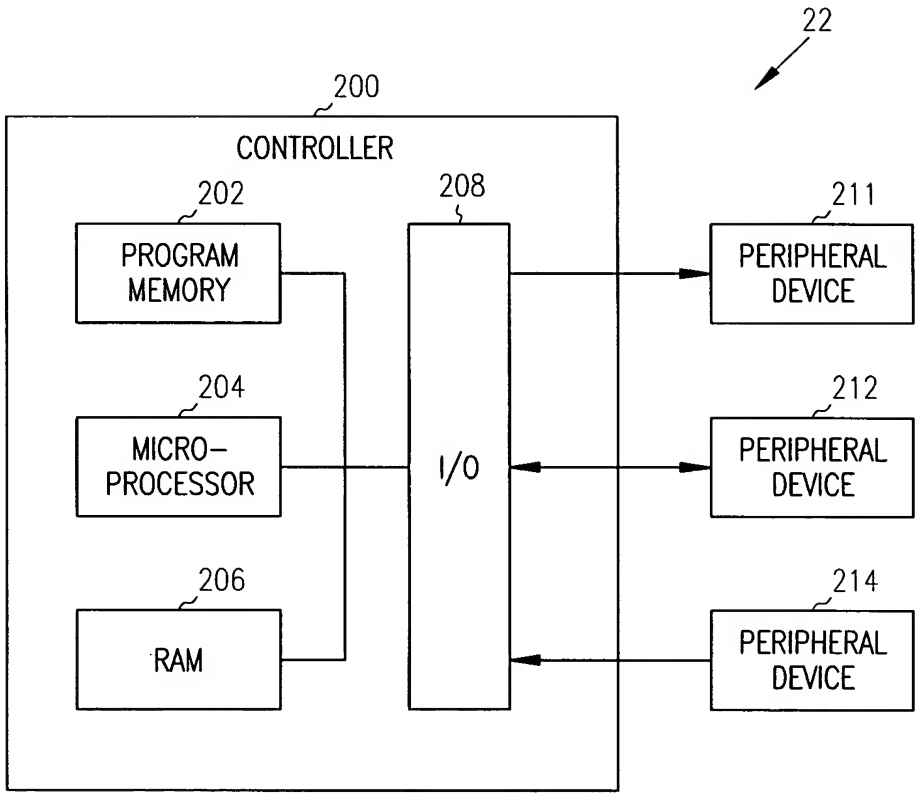
22
200
CONTROLLER
202
PROGRAM MEMORY
204
MICRO-PROCESSOR
206
RAM
208
I/O
211
PERIPHERAL DEVICE
212
PERIPHERAL DEVICE
214
PERIPHERAL DEVICE

FIG. 2

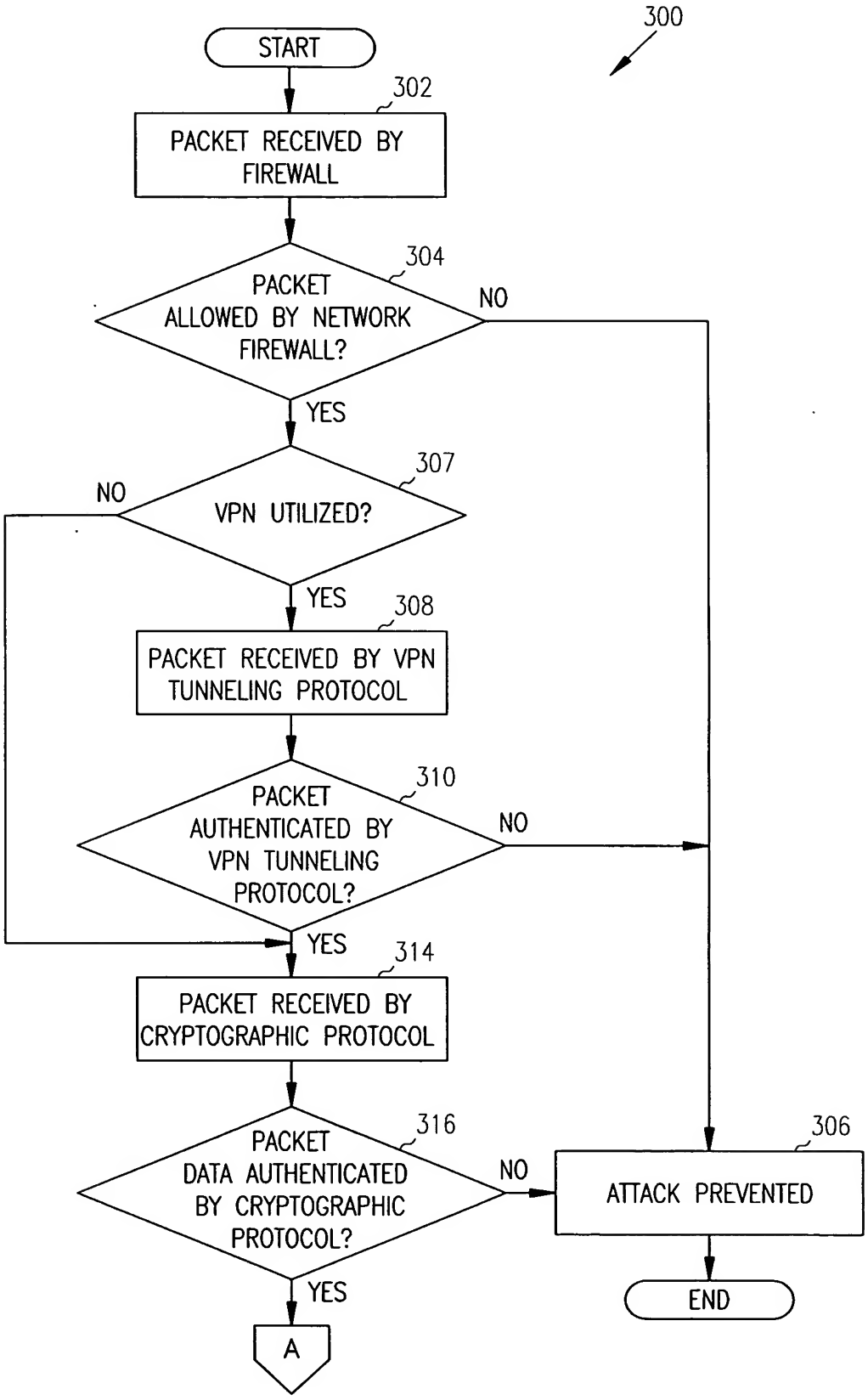
300
START
302
PACKET RECEIVED BY FIREWALL
304
PACKET ALLOWED BY NETWORK FIREWALL?
NO
YES
307
VPN UTILIZED?
NO
YES
308
PACKET RECEIVED BY VPN TUNNELING PROTOCOL
310
PACKET AUTHENTICATED BY VPN TUNNELING PROTOCOL?
NO
YES
314
PACKET RECEIVED BY CRYPTOGRAPHIC PROTOCOL
316
PACKET DATA AUTHENTICATED BY CRYPTOGRAPHIC PROTOCOL?
NO
YES
306
ATTACK PREVENTED
END
A

FIG. 3A

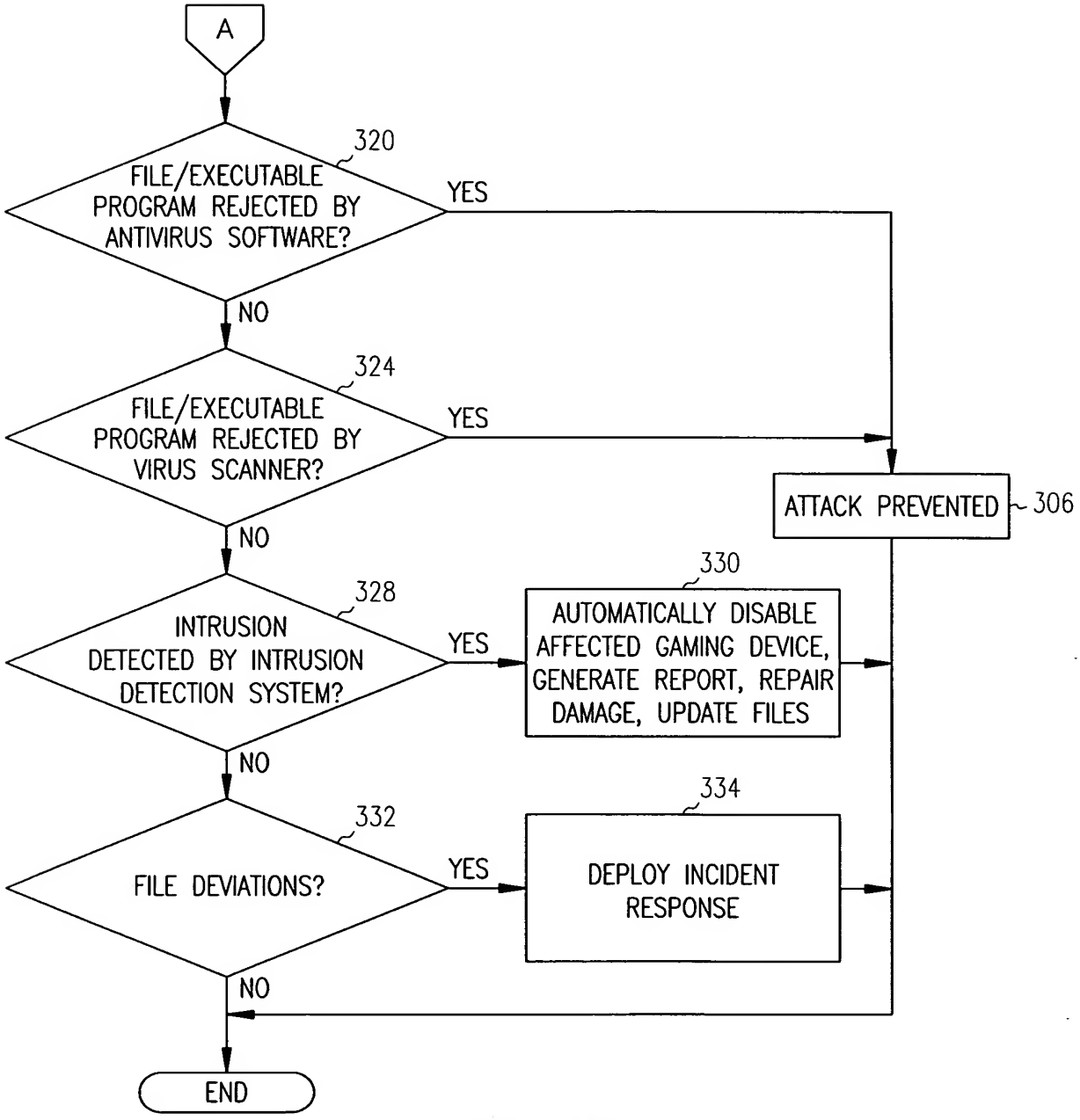
A
320
FILE/EXECUTABLE PROGRAM REJECTED BY ANTIVIRUS SOFTWARE?
YES
NO
324
FILE/EXECUTABLE PROGRAM REJECTED BY VIRUS SCANNER?
YES
NO
ATTACK PREVENTED
306
330
328
INTRUSION DETECTED BY INTRUSION DETECTION SYSTEM?
YES
AUTOMATICALLY DISABLE AFFECTED GAMING DEVICE, GENERATE REPORT, REPAIR DAMAGE, UPDATE FILES
NO
334
332
FILE DEVIATIONS?
YES
DEPLOY INCIDENT RESPONSE
NO
END

FIG. 3B

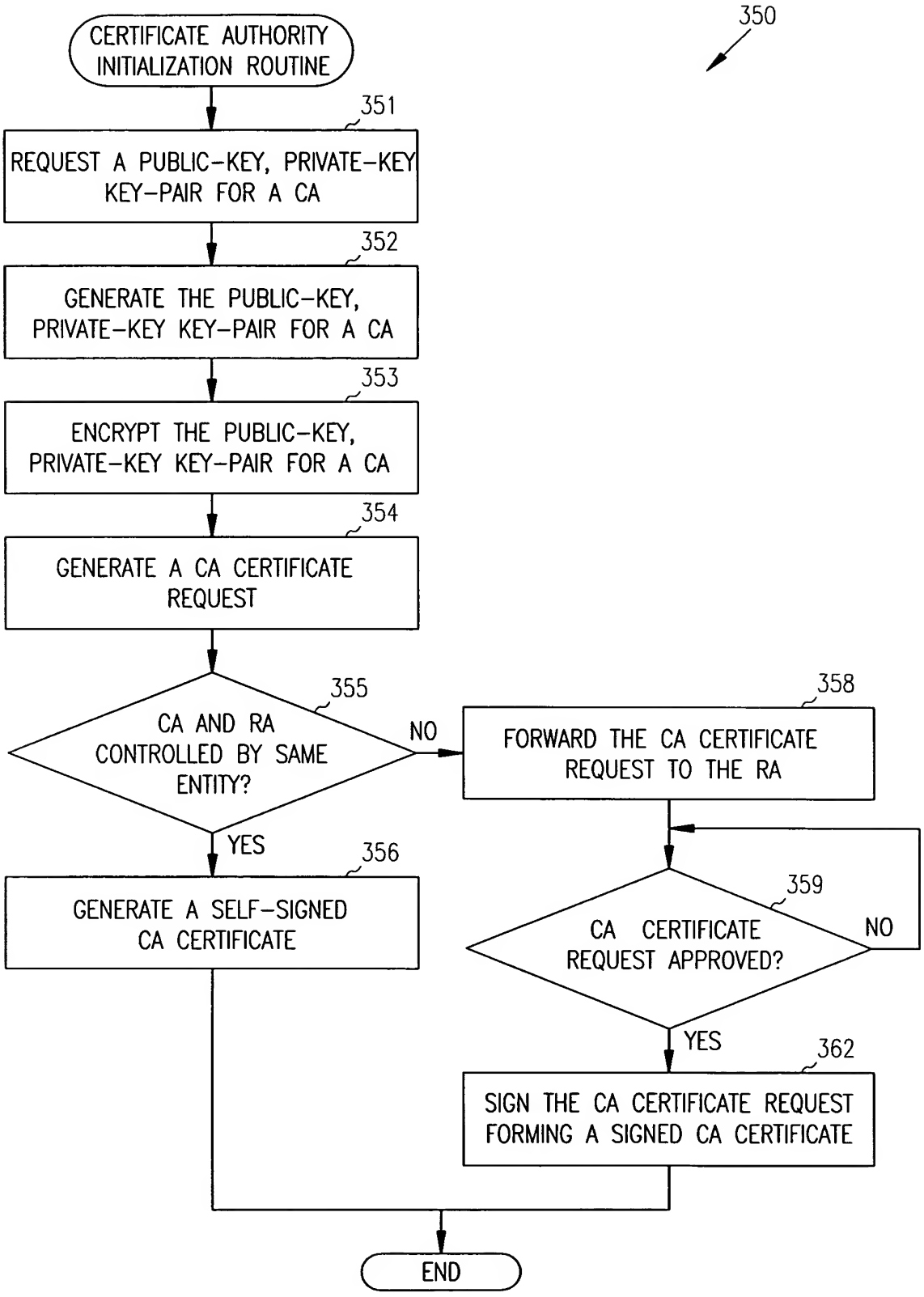
350
CERTIFICATE AUTHORITY INITIALIZATION ROUTINE
351
REQUEST A PUBLIC-KEY, PRIVATE-KEY KEY-PAIR FOR A CA
352
GENERATE THE PUBLIC-KEY, PRIVATE-KEY KEY-PAIR FOR A CA
353
ENCRYPT THE PUBLIC-KEY, PRIVATE-KEY KEY-PAIR FOR A CA
354
GENERATE A CA CERTIFICATE REQUEST
355
CA AND RA CONTROLLED BY SAME ENTITY?
NO
358
FORWARD THE CA CERTIFICATE REQUEST TO THE RA
YES
356
GENERATE A SELF-SIGNED CA CERTIFICATE
359
CA CERTIFICATE REQUEST APPROVED?
NO
YES
362
SIGN THE CA CERTIFICATE REQUEST FORMING A SIGNED CA CERTIFICATE
END

FIG. 3C

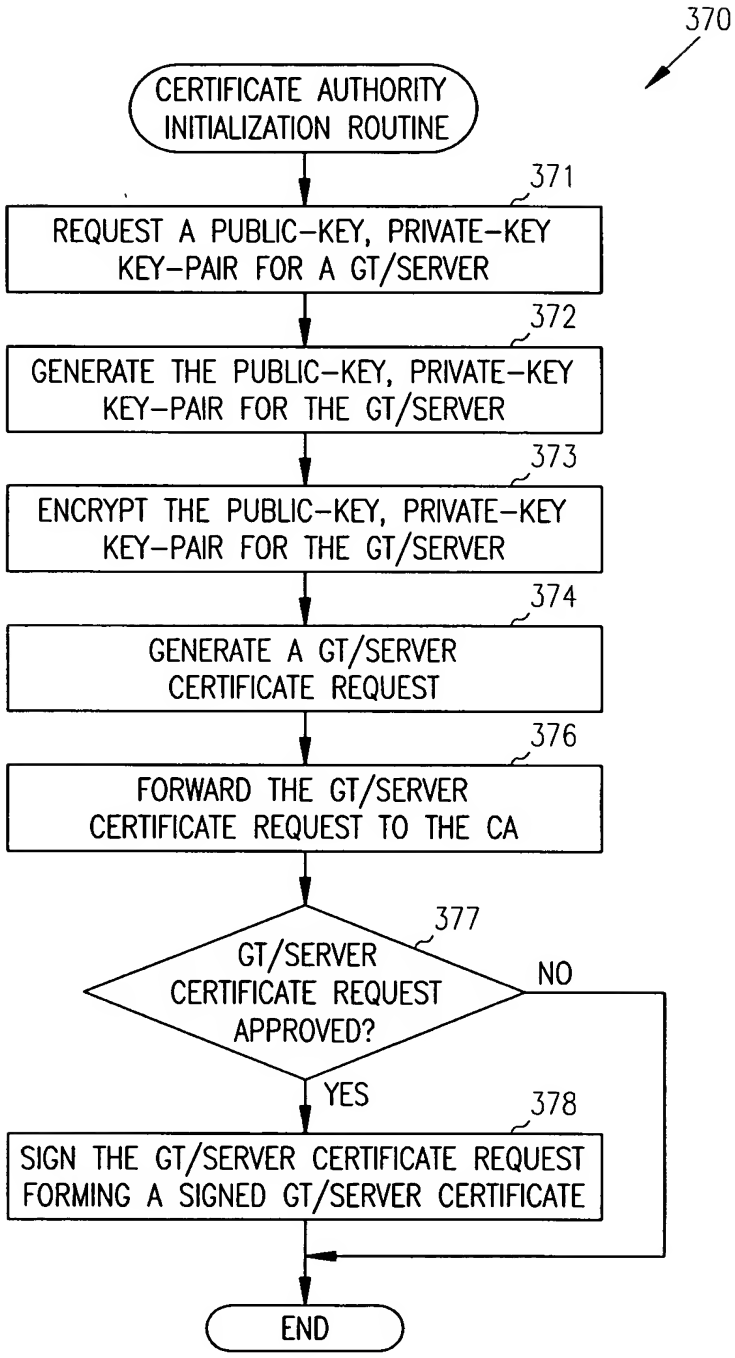
370
CERTIFICATE AUTHORITY INITIALIZATION ROUTINE
371
REQUEST A PUBLIC-KEY, PRIVATE-KEY KEY-PAIR FOR A GT/SERVER
372
GENERATE THE PUBLIC-KEY, PRIVATE-KEY KEY-PAIR FOR THE GT/SERVER
373
ENCRYPT THE PUBLIC-KEY, PRIVATE-KEY KEY-PAIR FOR THE GT/SERVER
374
GENERATE A GT/SERVER CERTIFICATE REQUEST
376
FORWARD THE GT/SERVER CERTIFICATE REQUEST TO THE CA
377
GT/SERVER CERTIFICATE REQUEST APPROVED?
NO
YES
378
SIGN THE GT/SERVER CERTIFICATE REQUEST FORMING A SIGNED GT/SERVER CERTIFICATE
END

FIG. 3D

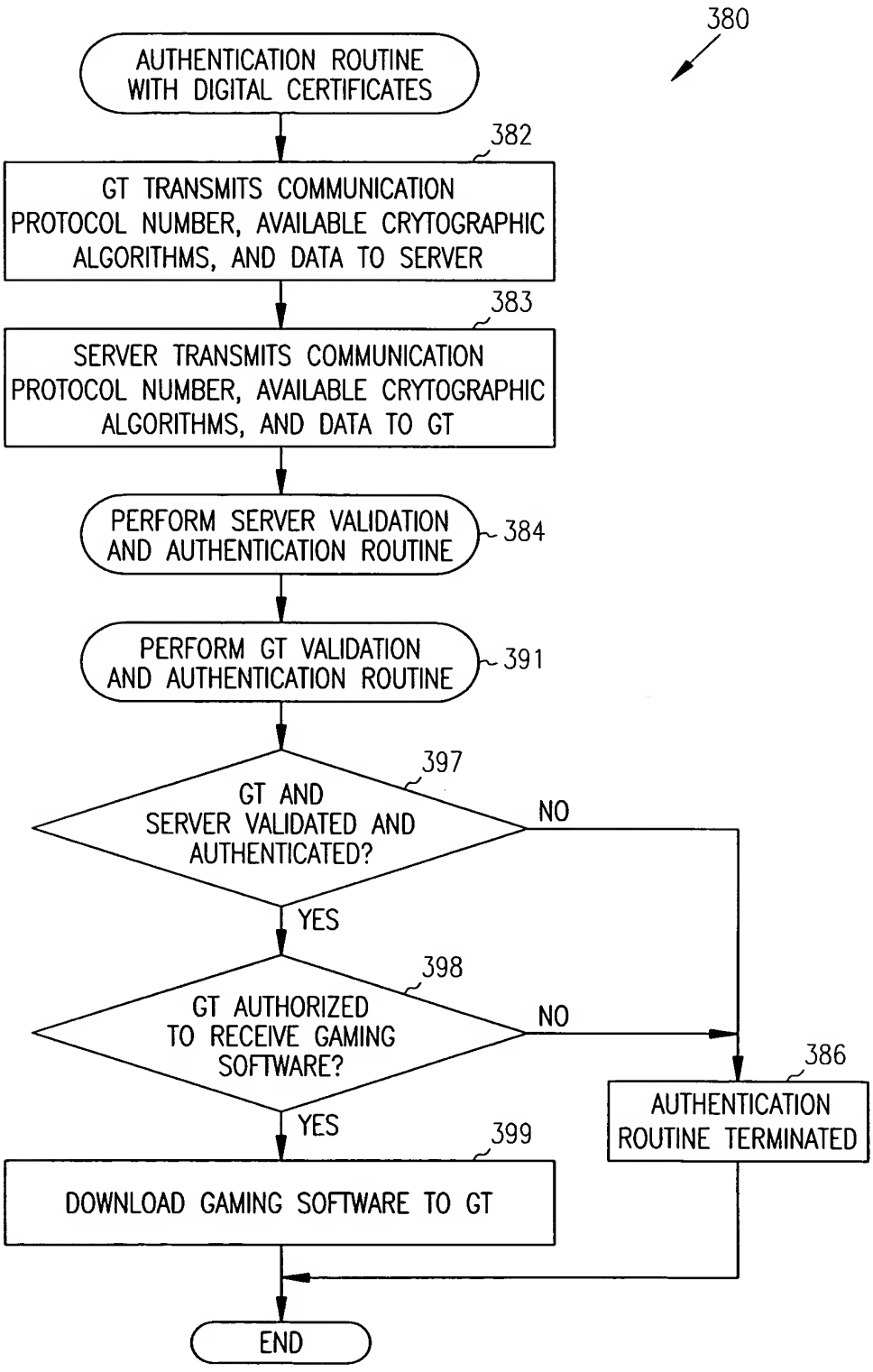
380
AUTHENTICATION ROUTINE WITH DIGITAL CERTIFICATES
382
GT TRANSMITS COMMUNICATION PROTOCOL NUMBER, AVAILABLE CRYTOGRAPHIC ALGORITHMS, AND DATA TO SERVER
383
SERVER TRANSMITS COMMUNICATION PROTOCOL NUMBER, AVAILABLE CRYTOGRAPHIC ALGORITHMS, AND DATA TO GT
PERFORM SERVER VALIDATION AND AUTHENTICATION ROUTINE
384
PERFORM GT VALIDATION AND AUTHENTICATION ROUTINE
391
397
GT AND SERVER VALIDATED AND AUTHENTICATED?
NO
YES
398
GT AUTHORIZED TO RECEIVE GAMING SOFTWARE?
NO
YES
386
AUTHENTICATION ROUTINE TERMINATED
399
DOWNLOAD GAMING SOFTWARE TO GT
END

FIG. 3E

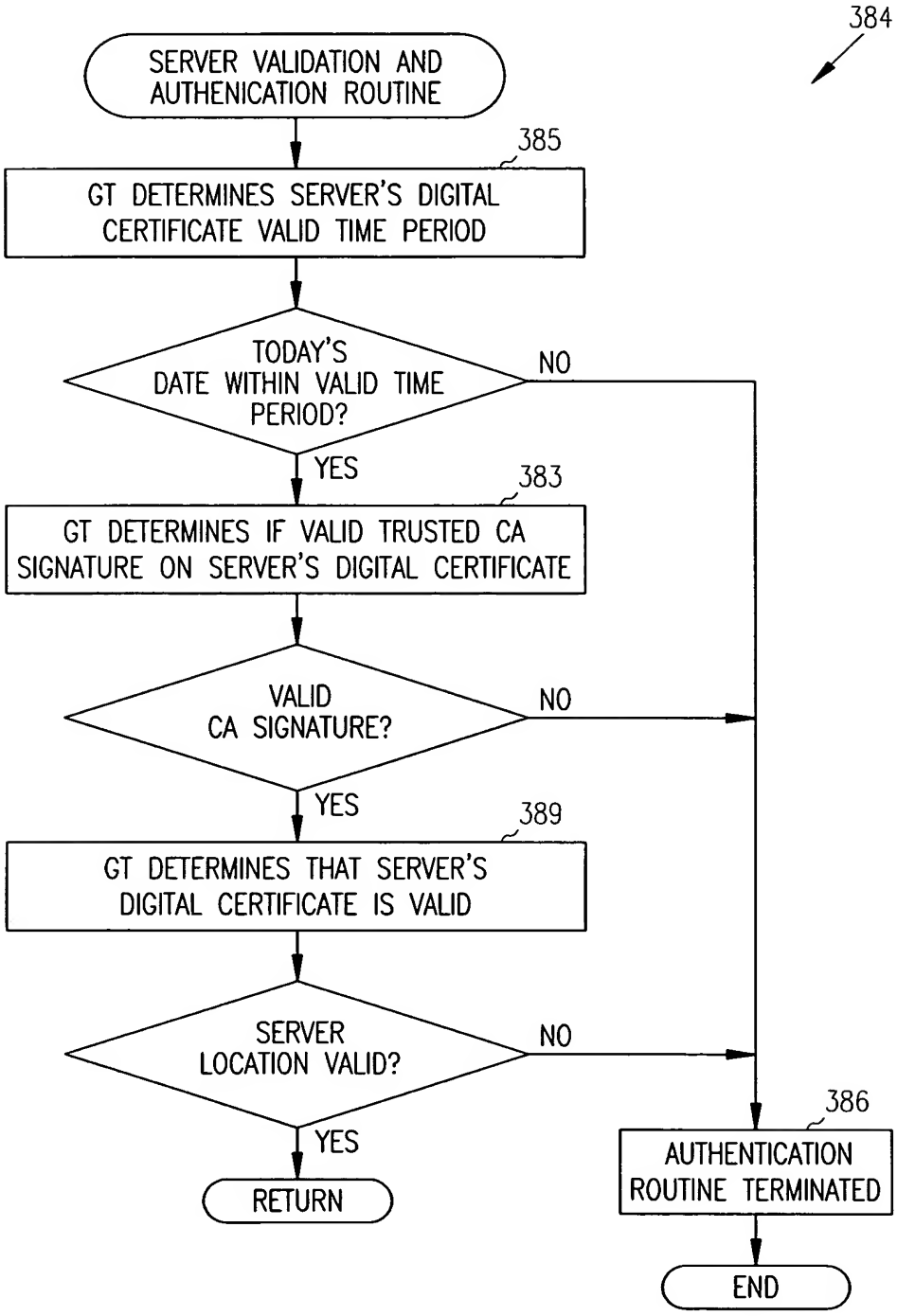
384
SERVER VALIDATION AND AUTHENICATION ROUTINE
385
GT DETERMINES SERVER'S DIGITAL CERTIFICATE VALID TIME PERIOD
TODAY'S DATE WITHIN VALID TIME PERIOD?
NO
YES
383
GT DETERMINES IF VALID TRUSTED CA SIGNATURE ON SERVER'S DIGITAL CERTIFICATE
VALID CA SIGNATURE?
NO
YES
389
GT DETERMINES THAT SERVER'S DIGITAL CERTIFICATE IS VALID
SERVER LOCATION VALID?
NO
YES
386
AUTHENTICATION ROUTINE TERMINATED
RETURN
END

FIG. 3F

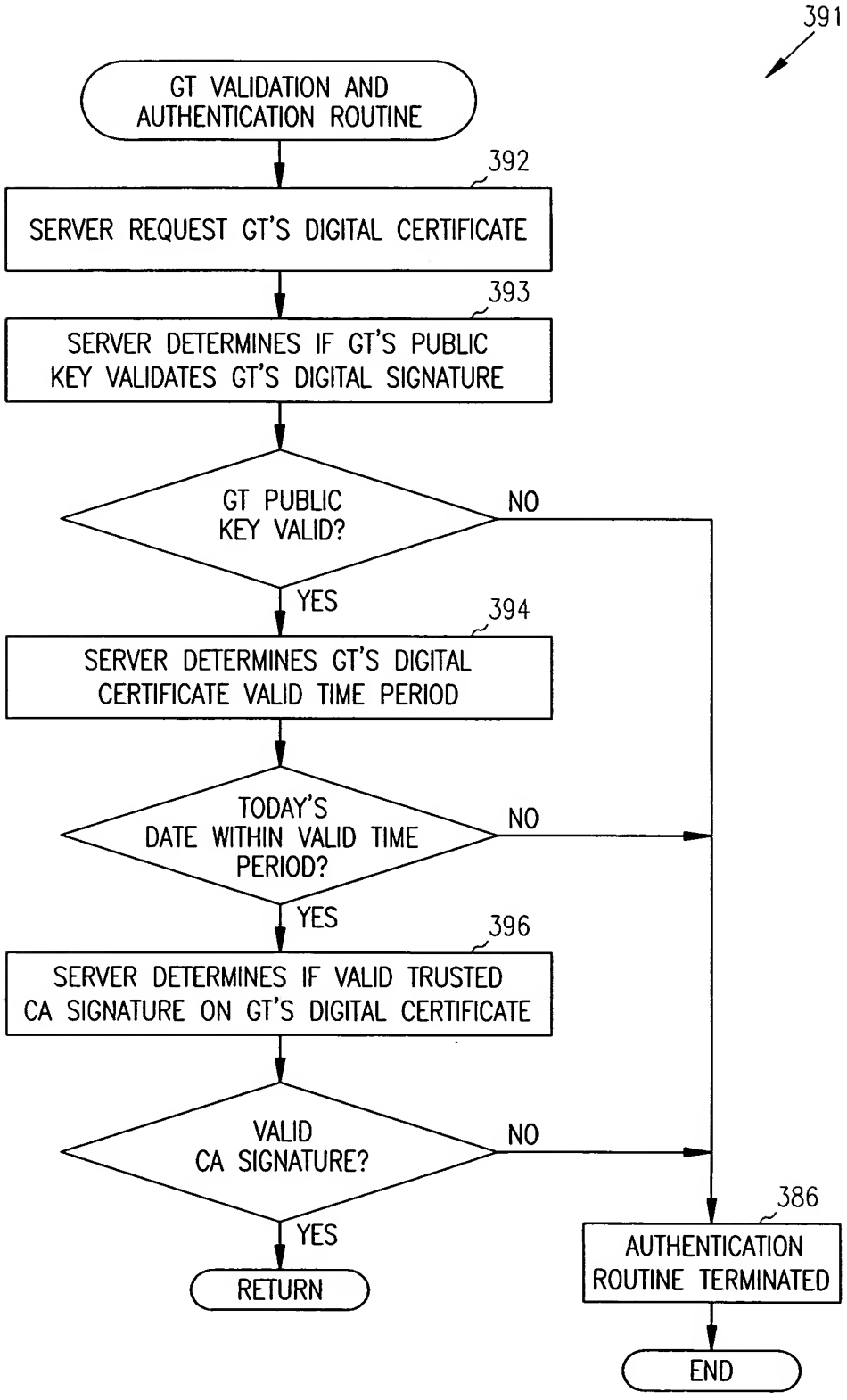
391
GT VALIDATION AND AUTHENTICATION ROUTINE
392
SERVER REQUEST GT'S DIGITAL CERTIFICATE
393
SERVER DETERMINES IF GT'S PUBLIC KEY VALIDATES GT'S DIGITAL SIGNATURE
GT PUBLIC KEY VALID?
NO
YES
394
SERVER DETERMINES GT'S DIGITAL CERTIFICATE VALID TIME PERIOD
TODAY'S DATE WITHIN VALID TIME PERIOD?
NO
YES
396
SERVER DETERMINES IF VALID TRUSTED CA SIGNATURE ON GT'S DIGITAL CERTIFICATE
VALID CA SIGNATURE?
NO
YES
386
AUTHENTICATION ROUTINE TERMINATED
RETURN
END

FIG. 3G

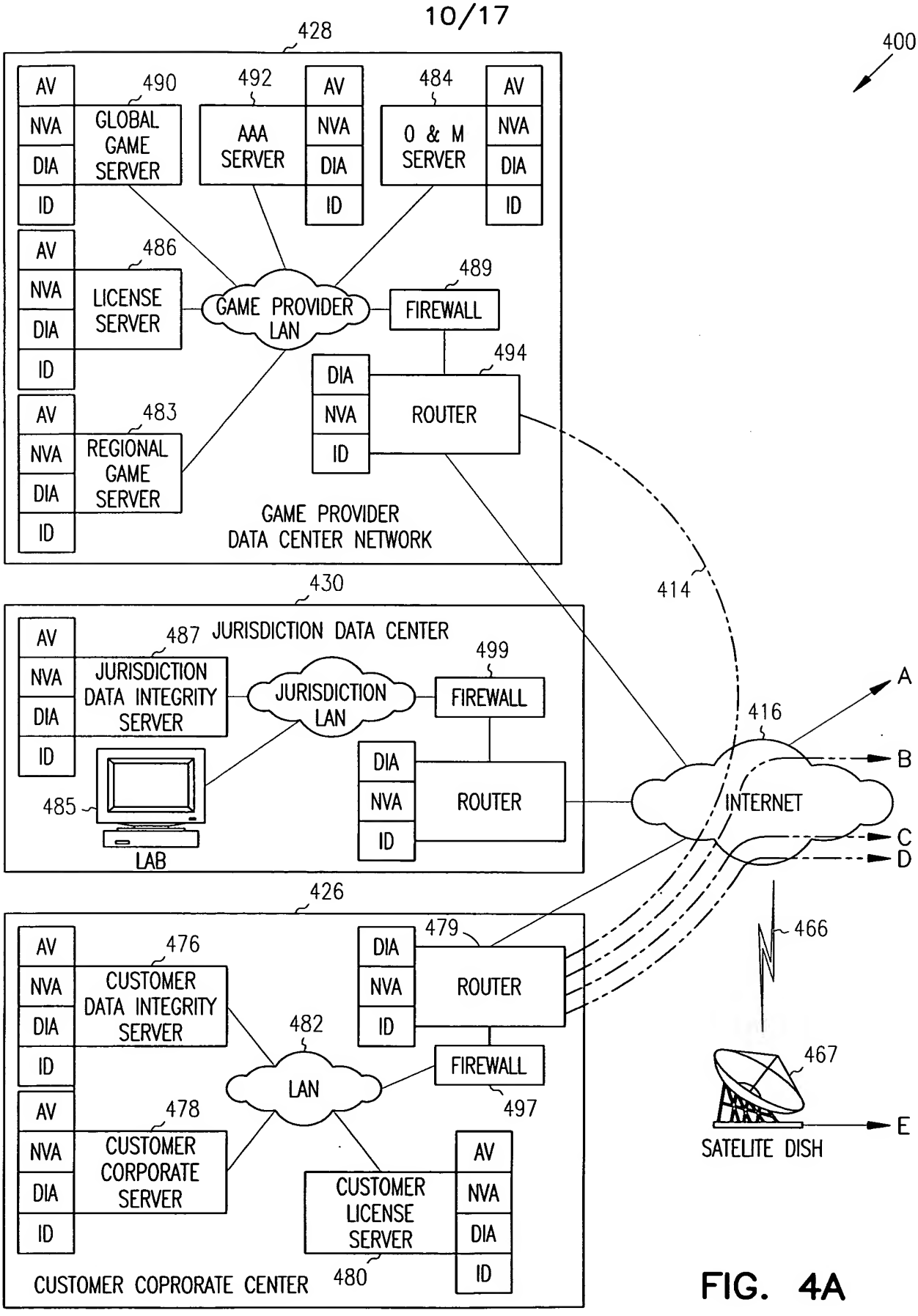
400
428
AV
NVA
DIA
ID
490
GLOBAL GAME SERVER
492
AAA SERVER
484
O & M SERVER
486
LICENSE SERVER
GAME PROVIDER LAN
489
FIREWALL
494
ROUTER
483
REGIONAL GAME SERVER
GAME PROVIDER DATA CENTER NETWORK
414
430
487 JURISDICTION DATA CENTER
JURISDICTION DATA INTEGRITY SERVER
JURISDICTION LAN
499
FIREWALL
ROUTER
485
LAB
416
INTERNET
A
B
C
D
426
476
CUSTOMER DATA INTEGRITY SERVER
479
ROUTER
482
LAN
FIREWALL
497
478
CUSTOMER CORPORATE SERVER
CUSTOMER LICENSE SERVER
480
CUSTOMER COPRORATE CENTER
466
467
SATELITE DISH
E

FIG. 4A

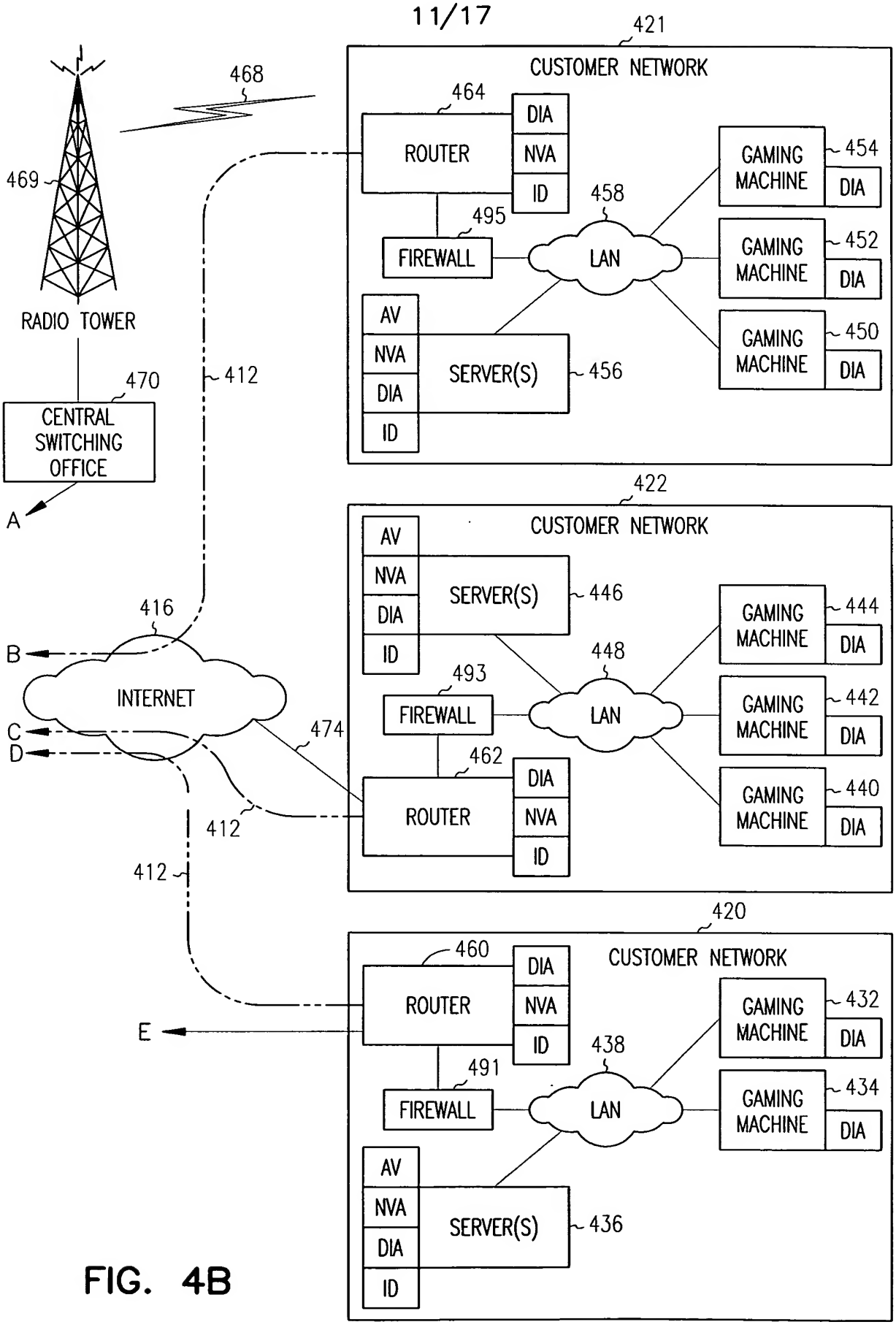
421
CUSTOMER NETWORK
468
464
ROUTER
DIA
NVA
ID
469
458
495
FIREWALL
LAN
454
GAMING MACHINE
DIA
452
GAMING MACHINE
DIA
450
GAMING MACHINE
DIA
AV
NVA
DIA
ID
SERVER(S)
456
RADIO TOWER
470
CENTRAL SWITCHING OFFICE
412
A
422
CUSTOMER NETWORK
AV
NVA
DIA
ID
SERVER(S)
446
416
B
INTERNET
C
D
448
493
FIREWALL
LAN
444
GAMING MACHINE
DIA
442
GAMING MACHINE
DIA
440
GAMING MACHINE
DIA
474
462
ROUTER
DIA
NVA
ID
412
412
420
CUSTOMER NETWORK
460
ROUTER
DIA
NVA
ID
E
438
491
FIREWALL
LAN
432
GAMING MACHINE
DIA
434
GAMING MACHINE
DIA
AV
NVA
DIA
ID
SERVER(S)
436

FIG. 4B

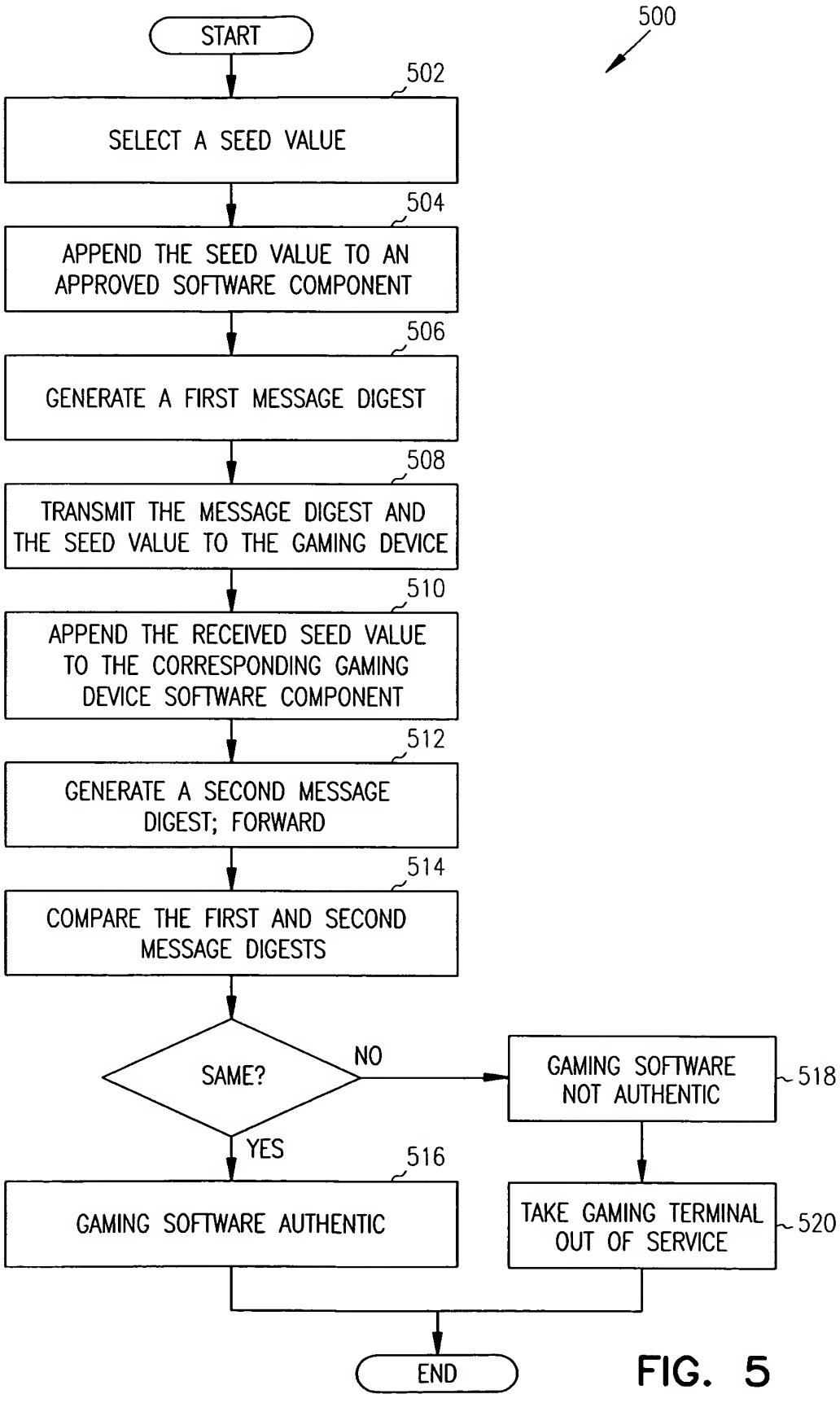
500
START
502
SELECT A SEED VALUE
504
APPEND THE SEED VALUE TO AN APPROVED SOFTWARE COMPONENT
506
GENERATE A FIRST MESSAGE DIGEST
508
TRANSMIT THE MESSAGE DIGEST AND THE SEED VALUE TO THE GAMING DEVICE
510
APPEND THE RECEIVED SEED VALUE TO THE CORRESPONDING GAMING DEVICE SOFTWARE COMPONENT
512
GENERATE A SECOND MESSAGE DIGEST; FORWARD
514
COMPARE THE FIRST AND SECOND MESSAGE DIGESTS
SAME?
NO
GAMING SOFTWARE NOT AUTHENTIC
518
YES
516
GAMING SOFTWARE AUTHENTIC
TAKE GAMING TERMINAL OUT OF SERVICE
520
END

FIG. 5

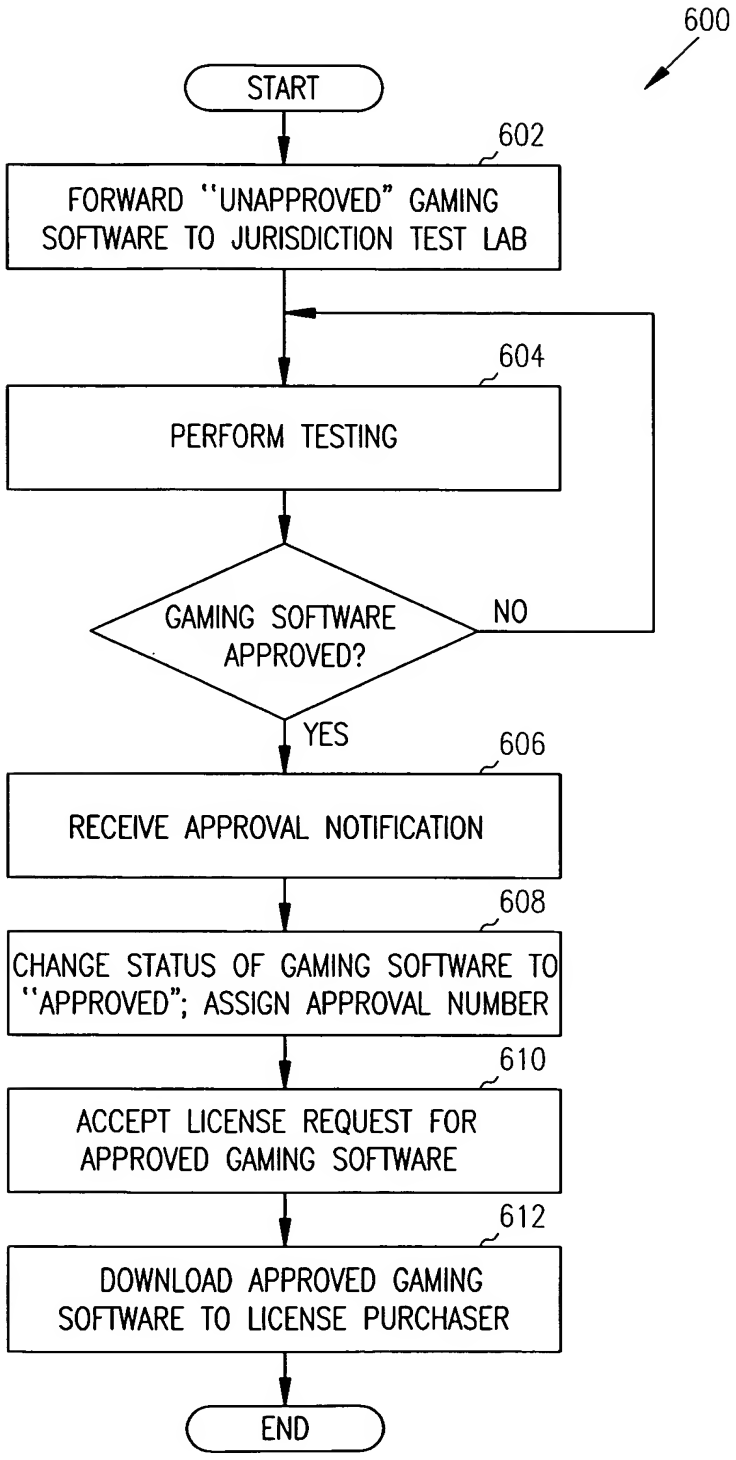
600
START
602
FORWARD "UNAPPROVED" GAMING SOFTWARE TO JURISDICTION TEST LAB
604
PERFORM TESTING
GAMING SOFTWARE APPROVED?
NO
YES
606
RECEIVE APPROVAL NOTIFICATION
608
CHANGE STATUS OF GAMING SOFTWARE TO "APPROVED"; ASSIGN APPROVAL NUMBER
610
ACCEPT LICENSE REQUEST FOR APPROVED GAMING SOFTWARE
612
DOWNLOAD APPROVED GAMING SOFTWARE TO LICENSE PURCHASER
END

FIG. 6

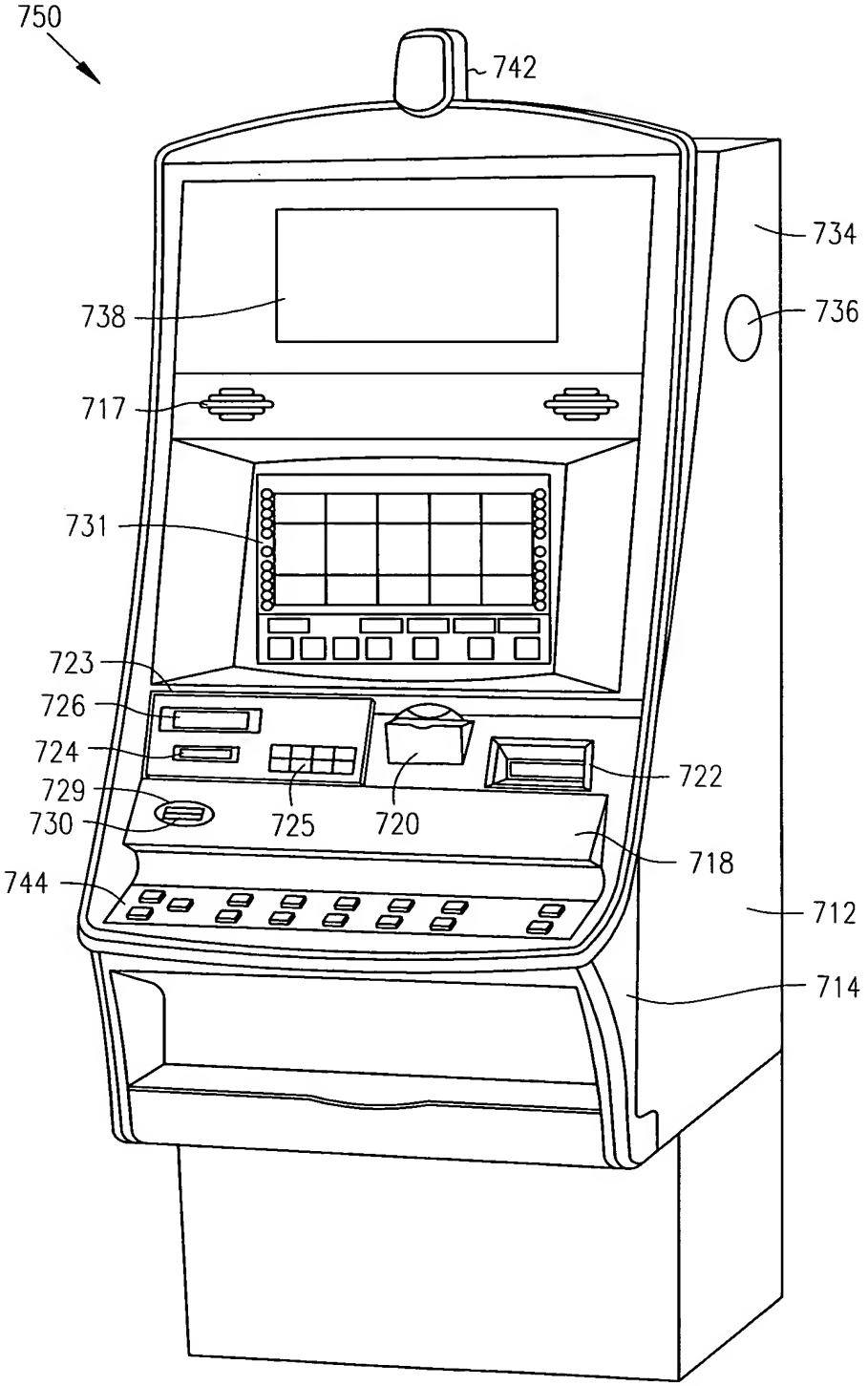
750
742
734
736
738
717
731
723
726
724
729
730
744
725
720
722
718
712
714

FIG. 7

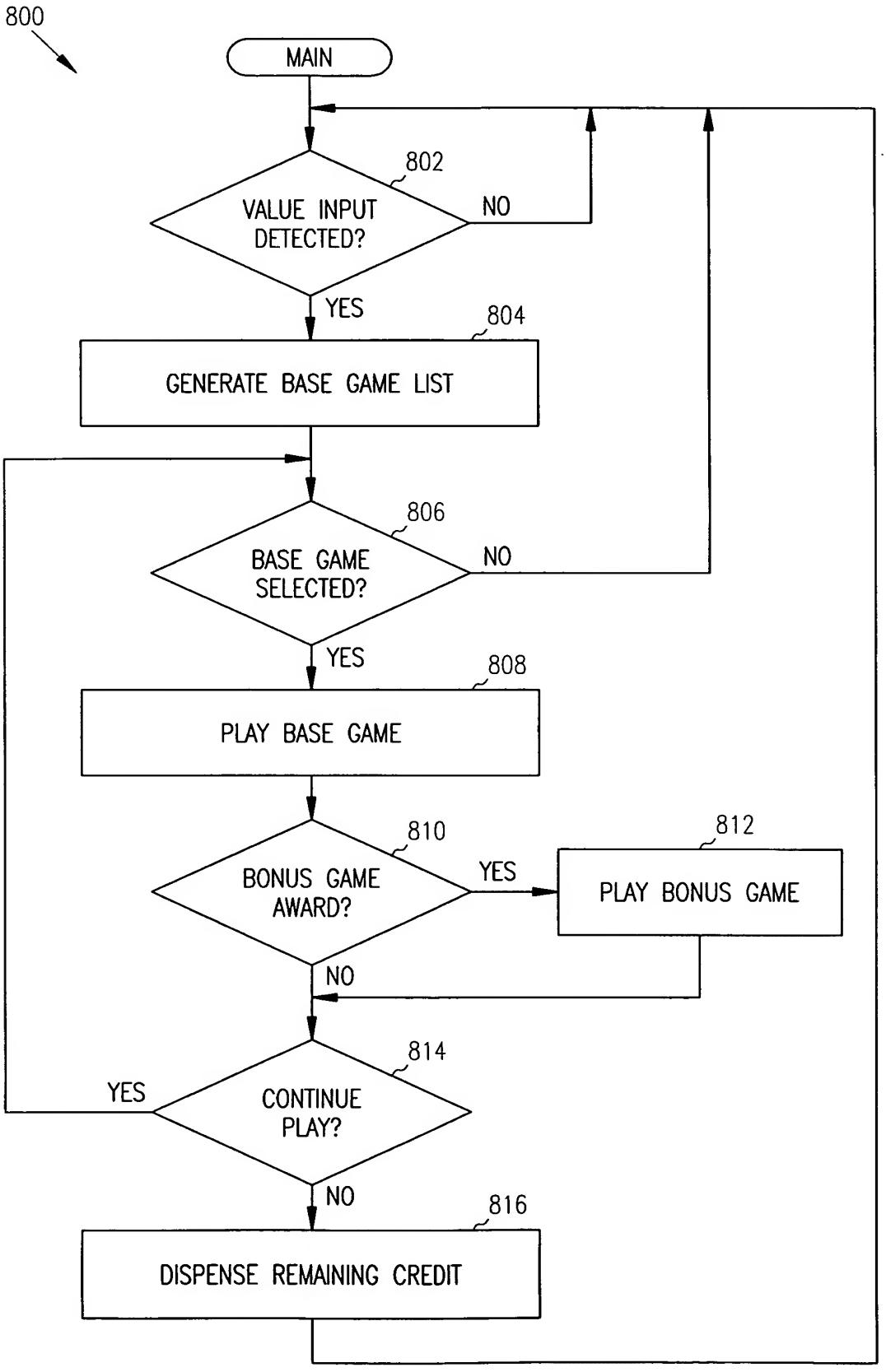
800
MAIN
802
VALUE INPUT DETECTED?
NO
YES
804
GENERATE BASE GAME LIST
806
BASE GAME SELECTED?
NO
YES
808
PLAY BASE GAME
810
BONUS GAME AWARD?
YES
812
PLAY BONUS GAME
NO
814
CONTINUE PLAY?
YES
NO
816
DISPENSE REMAINING CREDIT

FIG. 8

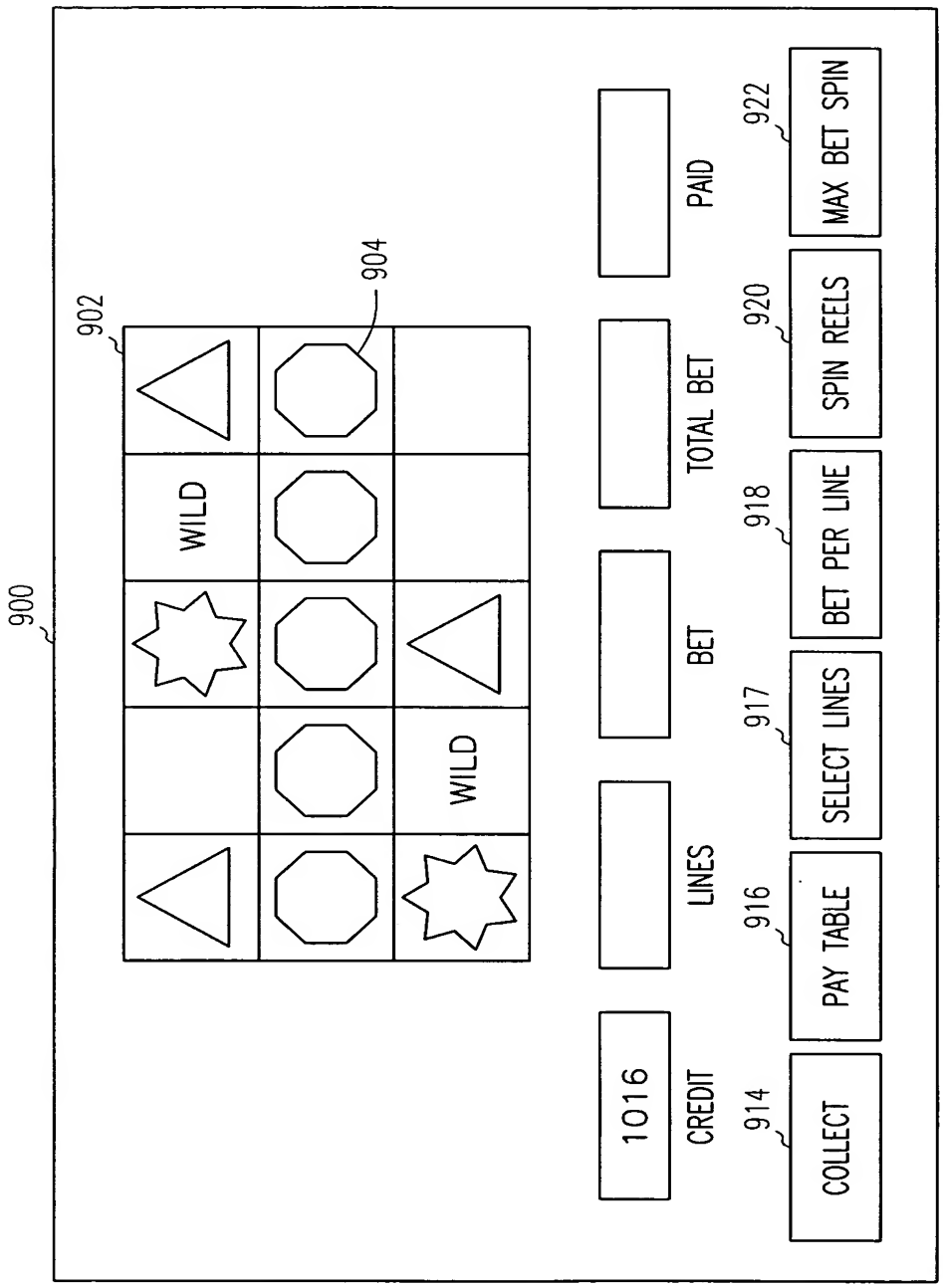
900
902
904
WILD
WILD
1016
CREDIT
LINES
BET
TOTAL BET
PAID
914
COLLECT
916
PAY TABLE
917
SELECT LINES
918
BET PER LINE
920
SPIN REELS
922
MAX BET SPIN

FIG. 9

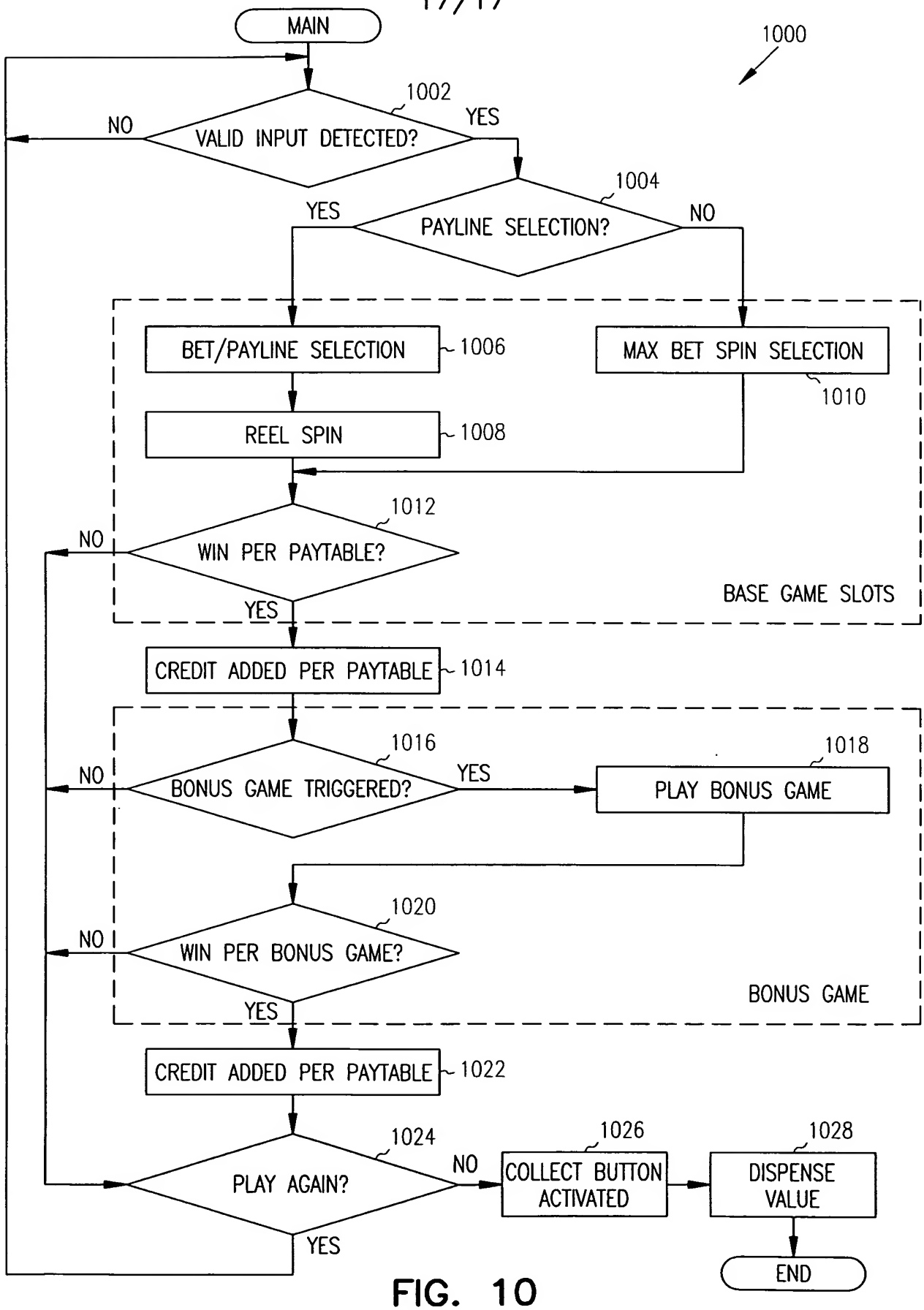
MAIN
1000
1002
VALID INPUT DETECTED?
NO
YES
1004
PAYLINE SELECTION?
YES
NO
BET/PAYLINE SELECTION
1006
MAX BET SPIN SELECTION
1010
REEL SPIN
1008
1012
WIN PER PAYTABLE?
NO
YES
BASE GAME SLOTS
CREDIT ADDED PER PAYTABLE
1014
1016
BONUS GAME TRIGGERED?
NO
YES
1018
PLAY BONUS GAME
1020
WIN PER BONUS GAME?
NO
YES
BONUS GAME
CREDIT ADDED PER PAYTABLE
1022
1024
PLAY AGAIN?
NO
YES
1026
COLLECT BUTTON ACTIVATED
1028
DISPENSE VALUE
END

FIG. 10